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10/717,607	11/21/2003	Pyung-Soo Kim	1793.1007	8193

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EXAMINER

KEEFER, MICHAEL E

ART UNIT	PAPER NUMBER
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2154

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07/31/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/717,607

Applicant(s)

KIM ET AL.

Examiner

Michael E. Keefer

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 21 November 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-27 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-27 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 21 November 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. This Office Action is responsive to the Application filed 11/21/2003.

Claim Objections

2. Claims 5-6 are objected to because of the following informalities:

Regarding claim 5, it is suggested that in line 5 the word "the" be deleted and replaced with the word --a-- to improve the clarity of the claim.

Claim 6 is objected to for depending upon objected claim 5.

Appropriate correction is required.

Claim Rejections - 35 USC § 101

3. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claims 8-13 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

Regarding **claim 8**, which is directed to a message. A message is merely a non-functional data structure. This subject matter is not limited to that which falls within a statutory category of invention because it is not limited to a process, machine, manufacture, or a composition of matter. Instead, it includes a data structure per se. Non-functional descriptive material does not fall within a statutory category since it is clearly not a series of steps or acts to constitute a process, not a mechanical device or combination of mechanical devices to constitute a machine, not a tangible physical article or object which is some form of matter to be a product and constitute a

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manufacture, and not a composition of two or more substances to constitute a composition of matter.

Claim 9, which depends from claim 8, fails to remedy the deficiencies of claim 8 and so is rejected for the same.

Regarding **claim 10**, which is directed to a message. A message is merely a non-functional data structure. This subject matter is not limited to that which falls within a statutory category of invention because it is not limited to a process, machine, manufacture, or a composition of matter. Instead, it includes a data structure per se. Non-functional descriptive material does not fall within a statutory category since it is clearly not a series of steps or acts to constitute a process, not a mechanical device or combination of mechanical devices to constitute a machine, not a tangible physical article or object which is some form of matter to be a product and constitute a manufacture, and not a composition of two or more substances to constitute a composition of matter.

Claims 11-13, which depend from claim 10, fail to remedy the deficiencies of claim 10 and so are rejected for the same.

Claim Rejections - 35 USC § 102

4. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

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5. Claims 1-3 are rejected under 35 U.S.C. 102(b) as being anticipated by Ton (US 2002/0067704).

Regarding **claim 1**, Ton discloses:

A method comprising:

transmitting a binding update (BU) message, containing an identifier that indicates whether there is a request for slave home agent information, to a master home agent, in a mobile IPv6 environment, wherein the slave home agent information is information on a slave home agent that neighbors the master home agent. ([0060] discloses a mobile node sending a Mobile IP RRQ (i.e. a binding update message) with an indicator inherent in the Mobile IP message format "A", which indicates whether or not the sender of the message desires an acknowledgement or not. In this case, the acknowledgement, as pointed out in the last sentence of [0060] includes alternate HA addresses (i.e. slave home agent information), thus the desire to receive an acknowledgement is also the desire to receive slave home agent information.)

Regarding **claim 2 as applied to claim 1**, Ton discloses:

wherein when the identifier is set to "1", the identifier indicates that there is a request for the slave home agent information, and when the identifier is set to "0", the identifier indicates that there is no request for the slave home agent information. (A bit value of 1 for the "A" bit in the mobile IP protocol indicates that an acknowledgement is desired. A bit value of 0 for the "A" bit in the mobile IP protocol indicates that an acknowledgement is not desired.)

Regarding **claim 3 as applied to claims 1-2**, Ton discloses:

wherein the BU message is transmitted in a first round of a binding update/binding acknowledgement (BU/BACK) operation. (The RRQ and RRP messages exchanged in [0060] - [0062] are equivalent to BU/BACK messages as they both serve the same purpose of setting up a tunnel between a HA and MN in a Mobile IP environment)

6. Claims 4-7 are rejected under 35 U.S.C. 102(b) as being anticipated by Ton.

Regarding **claim 4**, Ton discloses:

A method comprising: transmitting a binding acknowledgement (BACK) message, containing slave home agent information, to a mobile node, in a mobile IPv6 environment. ([0060] discloses a RRQ (i.e. a BACK message) containing alternate HA information (slave home agent information))

Regarding **claim 5 as applied to claim 4**, Ton discloses:

wherein the slave home agent information comprises:

an identifier that indicates whether the slave home agent information will be transmitted; ([0060] discloses that error code 0 is sent when alternate HA information is being sent, [0063] discloses that a non-zero error code is sent when alternate HA information is not included.)

a number of slave home agents; and ([0060] discloses that the Mobile IP Alternate HA extension is included, which must inherently include a size (i.e. the number of agents) in order to allow proper processing in an IP environment)

at least one slave home agent address. ([0060] discloses that addresses of alternate HAs are sent.)

Regarding **claim 6 as applied to claims 4-5**, Ton discloses:

wherein when the identifier is set to "0", the identifier indicates that the slave home agent information will not be transmitted, and when the identifier is set to a predetermined value other than "0", the identifier indicates that the slave home agent information will be transmitted. ([0060] discloses that error code 0 is sent when alternate HA information is being sent, [0063] discloses that a non-zero error code is sent when alternate HA information is not included.)

Regarding **claim 7 as applied to claim 4**, Ton discloses:

wherein the BACK message is transmitted in a first round of a BU/BACK operation. (The RRQ and RRP messages exchanged in [0060] - [0062] are equivalent to BU/BACK messages as they both serve the same purpose of setting up a tunnel between a HA and MN in a Mobile IP environment)

7. Claims 8-9 are rejected under 35 U.S.C. 102(b) as being anticipated by Ton.

Regarding **claim 8**, Ton discloses:

A binding update (BU) message in a mobile IPv6 environment, containing an identifier that indicates whether there is a request for slave home agent information, wherein the slave home agent information is information on a slave home agent that neighbors a master home agent that receives the BU message. ([0060] discloses a mobile node sending a Mobile IP RRQ (i.e. a binding update message) with an indicator inherent in the Mobile IP message format "A", which

indicates whether or not the sender of the message desires an acknowledgement or not. In this case, the acknowledgement, as pointed out in the last sentence of [0060] includes alternate HA addresses (i.e. slave home agent information), thus the desire to receive an acknowledgement is also the desire to receive slave home agent information.)

Regarding **claim 9 as applied to claim 8**, Ton discloses:

The BU message of claim 8, wherein when the identifier is set to "1", the identifier indicates that there is a request for the slave home agent information, and when the identifier is set to "0", the identifier indicates that there is no request for the slave home agent information. (A bit value of 1 for the "A" bit in the mobile IP protocol indicates that an acknowledgement is desired. A bit value of 0 for the "A" bit in the mobile IP protocol indicates that an acknowledgement is not desired.)

8. Claims 10-13 are rejected under 35 U.S.C. 102(b) as being anticipated by Ton.

Regarding **claim 10**, Ton discloses:

A binding acknowledgement (BACK) message in a mobile IPv6 environment, containing slave home agent information. ([0060] discloses a RRQ (i.e. a BACK message) containing alternate HA information (slave home agent information))

Regarding **claim 11 as applied to claim 10**, Ton discloses:

wherein the slave home agent information comprises:

an identifier that indicates whether the slave home agent information will be transmitted; ([0060] discloses that error code 0 is sent when alternate HA information is being sent, [0063] discloses that a non-zero error code is sent when alternate HA information is not included.)

a number of slave home agents; and ([0060] discloses that the Mobile IP Alternate HA extension is included, which must inherently include a size (i.e. the number of agents) in order to allow proper processing in an IP environment)

at least one slave home agent address. ([0060] discloses that addresses of alternate HAs are sent.)

Regarding **claim 12 as applied to claims 10-11**, Ton discloses:

wherein when the identifier is set to "0", the identifier indicates that the slave home agent information will not be transmitted, and when the identifier is set to a predetermined value other than "0", the identifier indicates that the slave home agent information will be transmitted. ([0060] discloses that error code 0 is sent when alternate HA information is being sent, [0063] discloses that a non-zero error code is sent when alternate HA information is not included.)

Regarding **claim 13 as applied to claims 10-11**, Ton discloses:

wherein slave home agent addresses are arranged in a predetermined order according to their priority levels. (Since the home agent is load balanced, the home agents sent to the mobile node will all be higher priority than the existing node.)

9. Claim 14 is rejected under 35 U.S.C. 102(b) as being anticipated by Ton.

Regarding **claim 14**, Ton discloses:

A mobile node that carries out binding update (BU) in a mobile IPv6 environment, the mobile node comprising:

a BU message transmission unit that transmits a BU message, containing an identifier that indicates whether there is a request for slave home agent information, to a master home agent; ([0060] discloses a RRQ (i.e. a BACK message) containing alternate HA information (slave home agent information))

a binding acknowledgement (BACK) message reception unit that receives a BACK message, containing the slave home agent information, from the master home agent; and ([0062] discloses that the response to the request is received.)

a slave home agent information storing unit that stores the slave home agent information contained in the BACK message, wherein if the BACK message has not been received from the master home agent at a predetermined moment of time, the BU message transmission unit transmits the BU message to a new master home agent using the slave home agent information stored in the slave home agent information storing unit. ([0062] discloses storing the list, [0063]-[0064] discloses using the list to send a new request if the primary HA fails.)

10. Claim 15 rejected under 35 U.S.C. 102(b) as being anticipated by Ton.

Regarding **claim 15**, Ton discloses:

A home agent that carries out binding update (BU) in a mobile IPv6 environment, the home agent comprising:

a BU message reception unit that receives a BU message, containing an identifier that indicates whether there is a request for slave home agent information, from a mobile node; ([0060] discloses the HA receiving the RRQ message.)

a slave home agent information transmission determination unit that determines whether to transmit the slave home agent information, requested by the mobile node, to the mobile node; ([0063] discloses determining whether to send the information or not)

a binding acknowledgement (BACK) message generation unit which generates a BACK message, containing the slave home agent information, if the slave home agent information transmission determination unit determines to transmit the slave home agent information, and generates an ordinary BACK message if the slave home agent information transmission determination unit determines not to transmit the slave home agent information; and ([0060] and [0064] disclose sending acknowledgements with and without the information)

a BACK message transmission unit that transmits the BACK message created by the BACK message generation unit to the mobile node. ([0060] and [0064] disclose sending acknowledgements with and without the information)

11. Claims 16-24 are rejected under 35 U.S.C. 102(b) as being anticipated by Ton. Regarding **claim 16**, Ton discloses:

A method of discovering a home agent address in a mobile IPv6 environment, comprising:

inserting a slave home agent address information request into a first binding update (BU) message; and transmitting the first BU message to a master home agent. transmitting a binding update (BU) message, containing an identifier that indicates whether there is a request for slave home agent information, to a master home agent, in a mobile IPv6 environment, wherein the slave home agent information is information on a slave home agent that neighbors the master home agent. ([0060] discloses a mobile node sending a Mobile IP RRQ (i.e. a binding update message) with an indicator inherent in the Mobile IP message format "A", which indicates whether or not the sender of the message desires an acknowledgement or not. In this case, the acknowledgement, as pointed out in the last sentence of [0060] includes alternate HA addresses (i.e. slave home agent information), thus the desire to receive an acknowledgement is also the desire to receive slave home agent information.)

Regarding **claim 17 as applied to claim 16**, Ton discloses:

upon not receiving a binding acknowledgement (BACK) message from the master home agent at a predetermined time, inserting the slave home agent address information request into a second BU message; and transmitting the second BU message to a slave home agent, wherein the slave home agent was identified in a previous BACK message, which included slave home agent information, and which was received from the master home agent in response to a previous BU message that included the slave home agent address information request. ([0063]-[0065])

Regarding **claim 18 as applied to claim 16**, Ton discloses:

wherein the first BU message comprises a home agent address request identification field to indicate whether slave home agent information is needed. (As cited in claim 16, the 'A' field serves this purpose)

Regarding **claim 19 as applied to claims 16-17**, Ton discloses:

wherein the second BU message comprises a home address request identification field to indicate whether the slave home agent information is needed. (As cited in claim 16, the 'A' field serves this purpose)

Regarding **claim 20 as applied to claim 16**, Ton discloses:

receiving a binding acknowledgement (BACK) message from the master home agent. ([0060] discloses receiving a RRQ i.e. a BACK message)

Regarding **claim 21 as applied to claims 16 and 20**, Ton discloses:

wherein the BACK message comprises a status field to indicate whether slave home agent information is included. (The error code field serves this purpose. [0060] and [0063])

Regarding **claim 22 as applied to claims 16 and 20-21**, Ton discloses:

wherein the BACK message comprises slave home agent information when the status field indicates that the slave home agent information is included, and wherein the BACK message does not comprise slave home agent information when the status field indicates that the slave home agent information is not included. (the extra header is included when the error status is 0, otherwise it is not. [0060] and [0063])

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Regarding **claim 23 as applied to claims 16 and 20-22**, Ton discloses:

wherein the BACK message comprises a number-of-slave home agents field to indicate a number of candidate slave home agents of higher priority levels. ([0060] discloses that the Mobile IP Alternate HA extension is included, which must inherently include a size (i.e. the number of agents) in order to allow proper processing in an IP environment)

Regarding **claim 24 as applied to claims 16 and 20-23**, Ton discloses:

wherein the number-of-slave home agents field includes the number of candidate slave home agents of higher priority levels when the status field indicates that the slave home agent information is included, and wherein the number-of-slave home agents field does not include the number of candidate slave home agents of higher priority levels when the status field indicates that the slave home agent information is not included. (the extra header is included when the error status is 0, otherwise it is not. [0060] and [0063])

Claim Rejections - 35 USC § 103

12. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

13. Claims 25-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over

Ton as applied to claims 16 and 20-23 above, and further in view of Ton.

Regarding **claims 25-27**, Ton discloses:

wherein the BACK message further comprises a home agent address field to indicate addresses of the candidate slave home agents. (the Mobile IP Extension Field contains addresses, [0060])

wherein the home agent address field includes the addresses of the candidate slave home agents when the status field indicates that the slave home agent information is included, and wherein the home agent address field does not include the addresses of the candidate slave home agents when the status field indicates that the slave home agent information is not included. (the extra header is included when the error status is 0, otherwise it is not. [0060] and [0063])

Ton discloses all the limitations of claims 25-27, but, does not disclose in the same embodiment the ordering of alternative home agents based upon priority, or the selection of home agents to be used by the mobile node being based upon priority.

Ton however, does teach a system for load balancing home agent requests between mobile nodes by compiling the information about the current busyness of nearby home agents, and suggesting the use of alternate home agents if the current agent is busier. See [0045]-[0048].

It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the redundancy system disclosed by Ton with the idea of load balancing by sending the request to the least busy nearby home agent as taught by Ton in order to allow the mobile node to choose a new home agent in a load balanced way in the event that the primary home agent is unreachable.

Conclusion

14. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

- a. Borella et al. (US 678643) teaches an option field in a request message sent to a primary network server that causes the network server in a reply to include a secondary network server address. (Abstract)
- b. Flinck (US 2004/0090942) teaches sending home agent addresses in binding acknowledgement messages and priorities.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael E. Keefer whose telephone number is (571) 270-1591. The examiner can normally be reached on Monday-Thursday 7am-4:30pm, second Fridays 7am-4pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nathan Flynn can be reached on (571) 272-1915. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

MEK 7/13/2007


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SUPERVISORY PATENT EXAMINER